## AMENDMENTS TO THE CLAIMS

**Claim 1 (Currently amended)**: A method for preparing a hydrogen generation reactor chamber to reduce coking, the method comprising:

applying a cold spray of an alkaline oxide or oxides doped with alkali or alkaline earth metals, mixed with ~~small quantity of~~ metal to ~~principal~~ at least one surfaces within the chamber; and

depositing a catalyst on a support structure in the reactor chamber, the support structure comprising at least one of metal foams, ceramic monoliths, foams, or mesochannels.

**Claim 2 (Original)**: The method of claim 1 wherein the metal is selected form the group consisting of noble metals and alkaline metals.

**Claim 3 (Original):** The method of claim 1 wherein the percentage of metal to alkaline oxide in the cold spray is about 50% to about 90%, respectively.

**Claim 4 (Original):** The method of claim 1 wherein said hydrogen generation reactor chamber is comprised of at least one of aluminum, stainless steel, titanium and high temperature refractory alloys suitable for hydrogen generation.

**Claim 5 (Original):** The method of claim 1 wherein said hydrogen generation reactor chamber is further comprised of at least one port having a tube.

**Claim 6 (Currently amended):** The method of claim 5 further comprising a step of applying a cold spray of an alkaline oxide ~~mixed~~ or oxides doped with alkali metal or alkaline earth metals, mixed with ~~small quantity of~~ metal to a surface of said tube, said application to said tube occurring either during said application of said ~~a~~ cold spray to principal surfaces within the chamber or during a separate applying step.

**Claim 7 (Original):** The method of claim 6 wherein said applying step is directed to at least an inner surface of said tube.

**Claim 8 (Original):** The method of claim 6 wherein said applying step is directed to at least an outer surface of said tube.

**Claim 9 (Original):** The method of claim 6 wherein said tube protrudes into said hydrogen generation reactor chamber.

**Claim 10 (Canceled)**

**Claim 11 (Original):** The method of claim 1 wherein said hydrogen generation reactor chamber has a cover, said cover having applied thereto a cold spray of an alkaline oxide mixed with small quantity of metal.

**Claim 12 (Original):** The method of claim 11 wherein said cover also has a hydrogen separation membrane incorporated therein.

**Claim 13 (Original):** The method of claim 10, wherein said mesochannels have a width of about 0.3 mm to 2.5 mm.

**Claim 14 (Original):** The method of claim 10, wherein said mesochannels have a width of about the 0.5 mm to about 2.0 mm.

**Claim 15 (Original):** The method of claim 1, wherein said cold spray is applied to leave portions of said hydrogen generation reactor chamber uncoated for joining operations.

**Claim 16 (Currently amended):** The method of claim ~~16~~ 15, wherein said joining operations comprise at least one of welding, brazing or diffusion bonding.

**Claim 17 (Original):** The method of claim 1, further comprising applying said cold spray to any protrusion into said hydrogen generation reactor chamber.

**Claim 18 (Original):** The method of claim 17, wherein said protrusions is at least one of tubings, thermowells and wells for sensor probes.

**Claim 19 (Canceled)**

**Claim 20 (Canceled)**

**Claim 21 (Original):** The method of claim 1 wherein said hydrogen generation reactor chamber is tubular.

**Claim 22 (Original):** The method of claim 21 wherein said tubular hydrogen generation reactor chamber has covers or end-caps that contain one or more tubes.